

NORWICH WATER POWER COMPANY,
CANAL DRAIN GATE
West bank of Shetucket River,
approximately opposite Twelfth Street
Greeneville section
Norwich
New London County
Connecticut

HAER No. CT-147-D

HAER
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

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Location: West bank of Shetucket River,
approximately opposite Twelfth Street
Greeneville section, Norwich
New London County, Connecticut

USGS Norwich Quadrangle
UTM Coordinates: 18.745840.4602410

Date of Construction: 1882

Engineer: Hiram Cook

Present Owner: City of Norwich, Connecticut
City Hall
Norwich, Connecticut 06360

Present Use: De-watering power canal

Significance: The drain gate is significant as an
integral part of a project that rebuilt
the dam and headgates of the Norwich
Water Power Company's canal. The
project reduced the length of the canal
and improved the flow of water, thereby
better meeting the needs of the
numerous manufacturers who had located
their factories along the Company's
canal. Taken together, the Greeneville
mills represented the largest
concentration of industry in Norwich
throughout the 19th century, and the
water and waterpower provided by the
dam and canal were vital to their
operation.

Project Information: This documentation was undertaken in
1994-1996 in accordance with a
Memorandum of Agreement among the
Federal Energy Regulatory Commission,
the Connecticut State Historic
Preservation Office, and the Advisory
Council on Historic Preservation. The
associated dam will be modified to
accommodate a fish passage.

Bruce Clouette
Historic Resource Consultants
Hartford, CT 06106

Description

The gate for de-watering the Norwich Water Power Company's canal in Greeneville, Norwich, Connecticut is situated about 500 feet south of the canal's headgates and dam. The gate is set into mortises in a channel, constructed of large-scale granite rubble, running between the east embankment of the canal and the west bank of the Shetucket River, into which the channel drains when the gate is open. Concrete has been added to the base of the channel's walls as scour protection.

The gate is of batten construction, built up of heavy wooden planking, with a single oak or chestnut timber fitted with a rack gear as a stem for the operating mechanism. Because the bottom of the canal is higher than the typical level of water in the river, much of the gate is exposed on the east side when in the closed position. The water level in the canal is typically about 15 feet above that of the Shetucket River.

The gate is raised by a mechanism consisting of a single pinion gear engaging the rack gear on the stem. The mechanism is operated by turning a square nut on the pinion shaft with a large wrench approximately 3 feet long.

The operating mechanism is sheltered by a small wood-framed enclosure measuring approximately 16 feet by 24 feet in plan and a single story in height. The building is framed with sawn posts 4 inches square, between which run nailers for the exterior siding of tongue-and-groove 6-inch pine boards. Asphalt shingles cover the gable roof. Windows are limited to a single small opening on the east or river side. The access road for the dam and headgates passes by the structure on the west or canal side. The interior of the gatehouse is accessed through a batten door centered on the west elevation; there is another door on the south end elevation.

Historical Background and Technological Significance

The function of the gate is to completely drain the power canal when needed for inspection or repairs. Although much of the canal would be emptied of water as soon as the headgates were closed, assuming that the mills downstream continued to draw the canal down, the canal might still have pools, particularly at the upstream end. By locating a drain a short distance downstream from the headgates, any such pools, as well as water leaking through the headgates, could be effectively drained off.

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Today, the sluices of the modern hydroelectric plant located just to the south ordinarily perform the function of the drain gate.

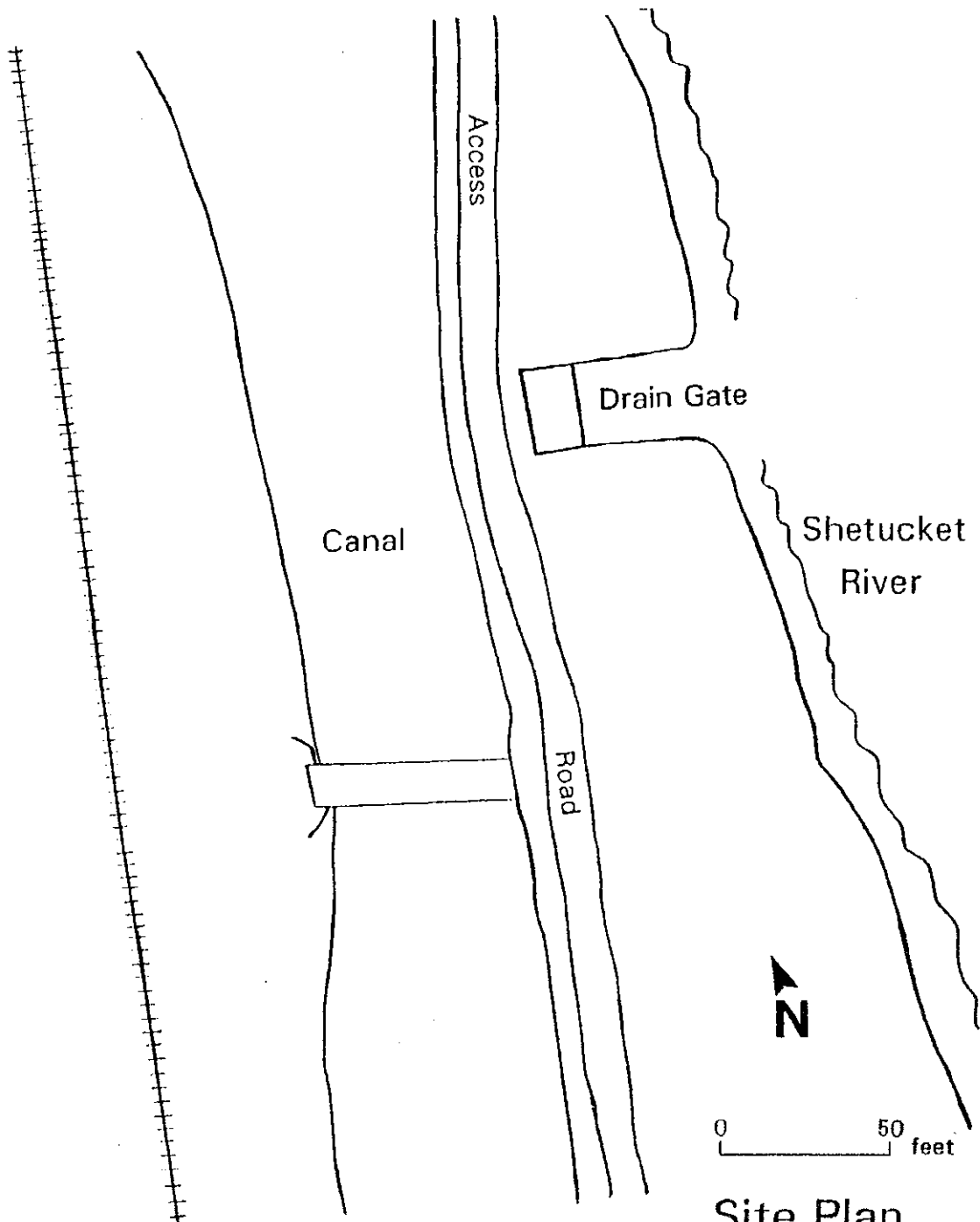
The drain, along with its gatehouse, dates from 1882, when the current dam was erected across the Shetucket River opposite Fourteenth Street. That structure replaced the Norwich Water Power Company's original dam, which had been built in 1829 some 1,200 feet upstream. The new dam and its ancillary structures, which included new headgates, gatehouse, canal overflow spillway, and drain gate, provided a better flow of water through the canal than the original headgates could, even after they had been doubled in width. The potential mill sites along the northern end of the canal, which had a relatively narrow embankment, had not been utilized during the first 50 years of operation, so little was lost by bypassing the northern part with the new dam further downstream. In fact, problems associated with a long canal, such as retarded flow, water seepage, upkeep, and ice formation, were proportionately reduced by making the canal shorter.

The original canal had a similar drain gate located approximately opposite Thirteenth Street; this location, however, was probably incorporated into the canal spillway structure built as part of the 1882 project and in any case would have been too close to the end of the canal to be effective, so a new drain gate had to be built further downstream.

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Site Plan